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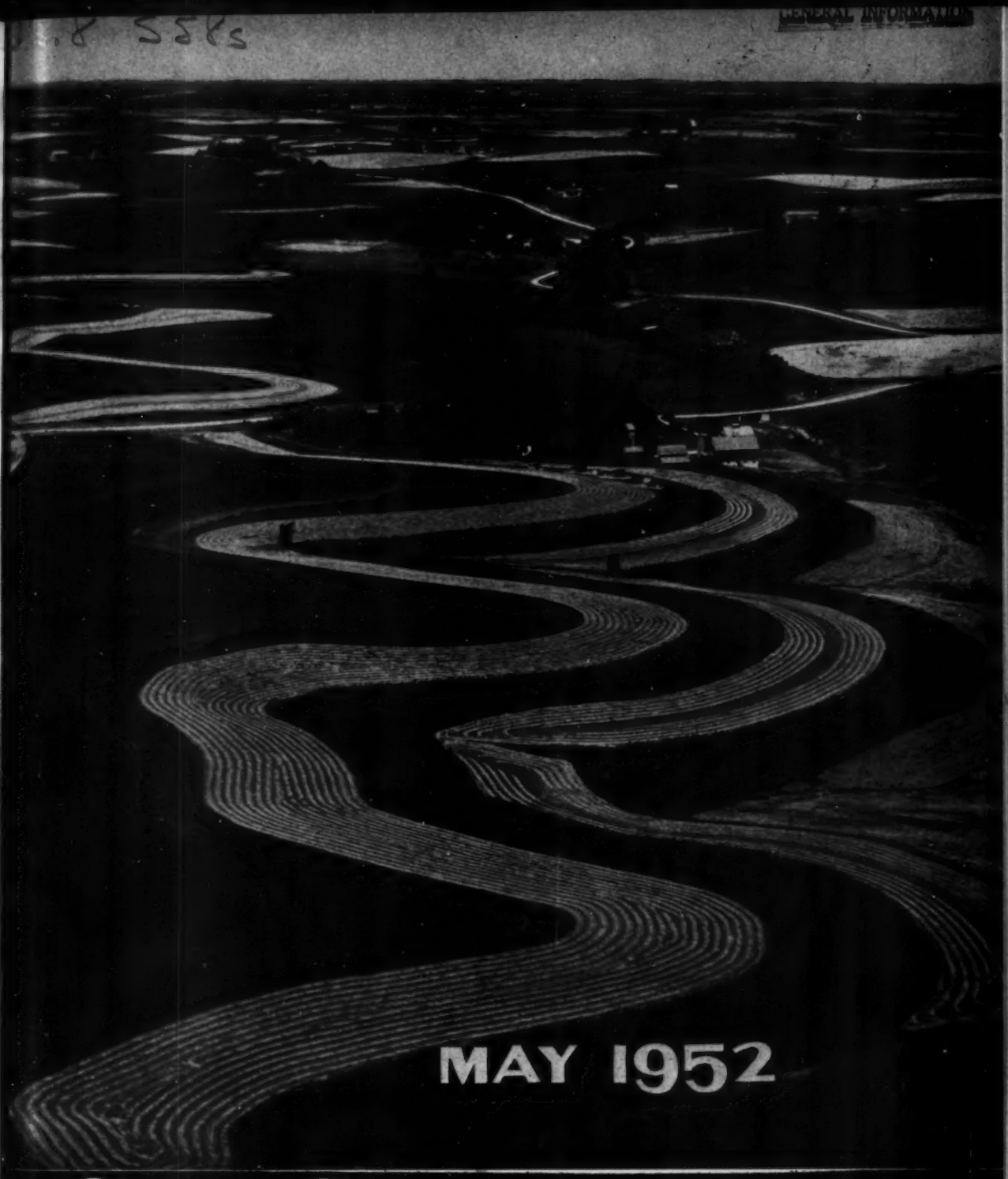

MAY 1952

SOIL CONSERVATION

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SOIL CONSERVATION •

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CHARLES F. BRANNAN
SECRETARY OF AGRICULTURE

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CHIEF, SOIL CONSERVATION SERVICE

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☆ THIS MONTH ☆

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WELLINGTON BRINK
Editor
Art Work by
W. HOWARD MARTIN

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CLEARING THE WAY FOR BETTER PRODUCTION.—On his Spring Hill farm in northeastern Massachusetts, Harold Rogers, following his conservation plan, removed the stone walls separating seven different fields and pulled the tract into one 12-acre field for operating as a single unit. He also cleared 27 acres of brush for pasture and hay land, and improved 17 other acres for pasture. From bottom land he removed flood deposits of sand so that good crops could be grown there.

McCLINTIC HONORED.—In recognition of his efforts in the field of conservation, the West Virginia Soil Conservation District Association has awarded a life membership in the association to Dr. C. F. McClintic, State director of conservation. The award was made at the supervisors' annual meeting at Jackson's Mill in appreciation of his long service on the State Soil Conservation Committee and his instigation of the cooperative agreement between SCS and the West Virginia Conservation Commission, under which district cooperators receive the benefit of advice from commission technicians in game management, forestry, and other conservation practices.

FRONT COVER.—This fine aerial photograph by W. H. Lathrop, made in July last year, shows strip cropping on the farm of Arno Kregel, which is 1½ miles west of Garnavillo, in Clayton County, Iowa.

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HERE'S WHAT IT TAKES TO BE TOP HAND!

By WILL HARVEY

COLORADO stockmen received much favorable publicity during 1951 for their practical efforts at improving their land and livestock when the *Western Farm Life* magazine and radio station KOA of Denver sparked a Range-Livestock Champion contest to name the State's Top Hand.

The unique feature about the program which is going into its second year is that, insofar as known, this contest is the first to put major emphasis on range improvement. Contestants who used public-domain land were cited for the way they cooperated with Government agencies in carrying out a constructive grazing program.

Frank Fehling of Nathrop, chosen Top Hand in Colorado in 1951, supplements his own holdings with 7,040 acres of Taylor grazing land in Park County, and approximately 13,760 acres of land in the Pike and San Isabel National Forests. His ambitious program to stop erosion with the use of heavy dirt-moving equipment to divert runoff water by terracing and filling gullies caught the

Part of Fehling's cow herd on upland pasture. Note the good stand of native grass.

Note.—The author is assistant editor, *Western Farm Life*, Denver, Colo.

Frank Fehling shows his RLC branding iron to Governors Dan Thornton of Colorado (left) and Frank Barrett of Wyoming. Mrs. Fehling looks on.

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eye of Government engineers, who are faced with similar problems on the public domain.

A dozen leaders representing groups actively working for the improvement of Colorado's pastures, ranges, sheep, and cattle joined with Jim White, editor of *Western Farm Life,* and Don Peach, Mile High Farmer at KOA, to work out the rules of the contest, develop a score card, and outline the working plan for judging on the county and regional levels. Soil conservation leaders endorsed the program enthusiastically, as did extension agents and a hundred local stockmen's associations.

The success of the contest was largely due to the efforts of the 12 men who worked with White and Peach to lay the ground work. They included Dave Rice, secretary of the Colorado Cattlemen's Association; Grett Gray, secretary of the Colorado Woolgrowers' Association; Kenneth W. Chalmers, Colorado State conservationist for the Soil Conservation Service; Charles L. Terrell, extension conservationist, and Ford Daugherty, livestock specialist, both of the Colorado A. & M. College extension service; Paul Swisher, commissioner, Colorado State department of agriculture; Don Daily, secretary of the National Association of Soil Conservation Districts; John T. Caine III, representing the National Western Stock Show and the Denver Union Stock Yards; W. G. McGinnies, director of the Rocky Mountain forest and range experiment station; H. J. Burback, regional conservationist of the United States Bureau of Land Management; Edward Cliff, then regional forester of the United States Forest Service; and Frank Temple of Hayden, Colo., representing the Colorado Association of Soil Conservation Districts.

To get the ball rolling the services of local cattlegrowers' and sheepgrowers' associations were enlisted to nominate some 80 stockmen from among whom the Top Hand was finally selected. Extension agents, soil conservation technicians, forest rangers, and district graziers all helped the stockmen pick their local nominees by April 15.

By August 1 three-man judging teams consisting of an extension agent, a soil conservationist, and a rancher had picked 31 county Top Hands. Men from one county judged contestants in another county. District or regional judging was done on a similar basis by the first of September, limiting the field to eight contestants for the title of Top Hand in Colorado.

Much interest was aroused through the press and radio in the excellent job being done by stockmen in conserving their natural resources. The three specialists selected as finalist-judges were D. A. Savage, superintendent, United States Southern Great Plains field station of Woodward, Okla.; Tony Fellhauer, extension livestock specialist, University of Wyoming; and Ivan Watson, extension animal husbandman, New Mexico A. & M. College.

A motion picture was made during the judging and is being shown before groups of ranchers in Colorado, as well as before service clubs and organizations. Illustrating how Top Hands carry out water spreading, sagebrush eradication, irrigation, and general range management, this picture will be a great help in carrying the contest into its second year. It includes many views of good stands of pastures, sleek cattle, new methods of feeding, and representative shots from prairie, mountain, and forest ranges.

The score card worked out by the advisory group covered vegetation, soil, livestock, and management and leadership. A possible 1,250 points were allotted to vegetation, 750 to soil, 2,000 to livestock, and 1,000 to management and leadership.

Most contestants carried out systematic plans for improving their ranges. None of them was grazing more stock than his ranges could carry. Protection of the soil from erosion and provision for soil improvement were commonly practiced by these ranchers.

When the finalist-judges computed their scoring, it was found that Top Hand Frank Fehling had earned an average of 4,703 points out of a possible 5,000. The average rating for the following classes of improvement, as compared with the maximum possible in each category, indicates why he is considered the best rancher in Colorado today:

Fehling scored 1,171 points for his use and care of vegetation, as compared with a possible 1,250 points. His use and care of the soil brought him 690 points out of a possible 750. For livestock, he was granted 1,908 of a possible 2,000; for management and leadership, 934 of the possible 1,000.

Frank Fehling, at 64, is a vigorous hard-working rancher who grazes his Herefords on summer ranges in the San Isabel and Pike National Forests at elevations upwards of 10,000 feet. He also uses Taylor grazing land and deeded land in the same area.

He runs a herd of 500 breeding cows. Although

1951 was a record dry year on his range, judges found it in good shape with ample grass, and his cattle were fat.

Comments made by the finalist-judges when their task was finished speak well for Colorado ranchers who were selected as regional Top Hands. Said Dave Savage:

"Harvey Harris of Sterling is doing an exceptional job of reseeding go-back lands. There are many such opportunities awaiting other ranchers in Colorado and the Great Plains area. Some of his irrigated valley and meadow land has been greatly improved.

"Frank Fehling is doing a fine job in this respect, developing an extremely heavy carrying capacity on his valley irrigated meadows and pastures.

"Chester L. Mayer of Eagle, another regional Top Hand, is doing a splendid job of establishing irrigated pastures, leveling and fertilizing them.

"Calvin Hixon of Ordway is renovating meadows and using tillage implements to work over the soil. By ripping it up, he is able to get the necessary moisture in the soil.

"He uses a system of flood irrigation and is doing an outstanding job of diverting water from a small creek to adjacent land. Similar progress can be made by other ranchers in the Great Plains area. This matter of water spreading is extremely important in getting the full value out of our natural resources. We are certainly impressed with the wonderful progress Colorado ranchers are making in this respect."

Tony Fellhauer made these pertinent observations:

"I was particularly pleased that these eight district Top Hands all show heavy production per unit and at the same time are building up their land. The judges were impressed with the fine spirit of competition shown by the contestants.

"Wallace Wineinger of Ordway prided himself on the uniform quality of his cattle. R. Wade Peterson of La Jara likewise has an excellent group of cattle.

"We were up at G. N. Winder's ranch near Craig, in the northwest corner of the State. Norm Winder is an outstanding example of a man producing heavy lambs. His wool clip averages about 10 pounds per animal.

> What is the grand strategy of this country?
>
> Put very simply, it is a two-handed job. With one hand we are seeking to deter communist aggressors from risking a third world war. With the other, we aim to help the hungry and disadvantaged peoples of the world alleviate the misery and hopelessness on which aggressive communism breeds. We seek to give to these people the solid hope for a better life which is the indispensable requisite for lasting peace.
>
> *From an address by the Honorable Charles F. Brannan, Secretary of the United States Department of Agriculture.*

"Down at Eagle on the western slope we visited Chet Mayer, as Dave mentioned. He is doing particularly well in handling the problem of public-domain range. His is a well-balanced operation, both in feed and range conditions, and he gets heavy production with quality cattle. A master fence-builder, he arranges his fences on the contour so that the cattle graze at increasingly higher levels as the spring and summer ranges get their growth.

"We saw an excellent example of soil use at Jim Price's ranch near Byers. He literally ties the land down with legume and grass pastures bringing water onto it with pumps. A good number of his neighbors are not livestock operators. They might profit in the long run by watching what Price is doing. Many of them are following what Dave Savage terms the extremely alarming practice of repeating the serious mistake made in World War I of plowing up the native land and placing it under cultivation, going into straight wheat production."

Ivan Watson said that he had been absent from Colorado for the past 10 years, and was impressed with the progress that has been made on ranches throughout the State. "The folks we visited," he said, "are conservation minded, and are doing a good job at management."

Mr. and Mrs. Fehling were honored as Top Hands during the National Western Stock Show in Denver. The eight regional Top Hands received plaques commending them for their superior use of the land.

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MORE Food and Fiber FROM FEWER ACRES

By R. E. UHLAND

Sericea like this helped to increase beef production in South Carolina in 1951.

ON THE BASIS of present trends, it is estimated that another 2.6 billion pounds of meat per year will be required by 1960 — along with an added 8 billion quarts of milk and 583 million dozen eggs—to feed our increased population. The United States Census Bureau estimates that by 1960 there will be a minimum of 18 million more people in the United States than in 1950. This will call for an increase of more than 8 percent in our production of food and fiber over that produced in 1950 if we are going to maintain our present standard of living.

Data presented from the Southeast—where erosion has been serious and soil deterioration excessive—show that by applying better farming practices, much more food and fiber are being produced on less acres. The average number of acres of land in harvested crops in 10 Southeastern States for the period 1927-36 was 51,193,000, compared with an average acreage of 47,522,000 for 1948 and 1949. This represents a decrease in cropland of 7.2 percent, most of which was planted to grass or trees.

The statement has frequently been made that farmers can't afford to reduce their cotton and corn acreages. These statements obviously were made on the assumption that reduced acreages meant reduced production and lower income. Statistics of the United States Department of Agriculture show, however, that although the acreage planted to corn in the Southeast for the 5-year period 1945-49 averaged 18.4 percent less than for the 10-year period 1927-36, the average total production was 31.1 percent greater. The per-acre yield averaged 55.8 percent greater. For the years 1948-49 the corn acreage was 16 percent less but the production was 45.6 percent more, and the per-acre yield was 73.7 percent greater than for the 10-year period.

Similarly, the cotton acreage for the 5-year period 1945-49 was 37.1 percent less than for the 10-year period 1927-36, but the total production was only 8.2 percent lower. For 1948 and 1949 the average acreage was 24.7 percent lower than for the 10-year period, but the production was 14.8 percent greater. The per-acre yield averaged 45.8 percent more. For the last 2 years the per-acre yield was up 54.1 percent.

For this latter period (1945-49) the oat acreage was increased 75.8 percent. The per-acre yield was 46.6 percent greater and the total production was 157.5 percent over that for the 10-year period 1927-36.

The average acreage of tame hay harvested during the period 1927-36 was 7.1 million acres—with an average per-acre yield of 0.86 ton. The average

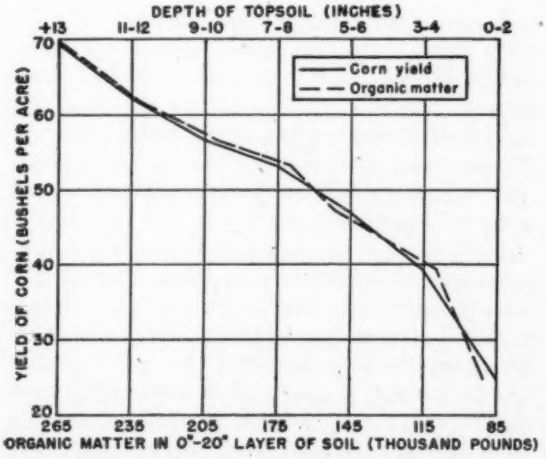
Note.—The author is research specialist and liaison officer, Soil Conservation Service, Washington, D. C.

acreage of hay harvested for the 2 years 1948-49 in the same States of the Southeast was just under 10 million acres—an increase of 39.9 percent. The per-acre yield was increased 29.1 percent, and the total production 80.1 percent.

As might be expected, these marked changes in acreages of major crops, together with big increases in winter cover crops and improved pastures, have brought major increases in the numbers of livestock in the Southeast. For example, the average number of all cattle and calves (including cows and heifers kept for milk) in the 5-year period 1935-39 was 3,925,000. The average value was $33.96 per head. For the years 1949 and 1950 the average number of all cattle and calves (including cows and heifers kept for milk) in the same States was 11,879,000. Their average value was $94.40 per head. The average annual value of the cattle kept on farms during the earlier period was $133,298,000. For the 2 years 1949-50 the average value was $1,121,371,000. Thus, there was an increase of 202.6 percent in the number of cattle in the region. The average value increased 741.3 percent.

Many factors have obviously contributed to these revolutionary changes in the agriculture of the Southeast. Conservation farming has been one of the major factors. In addition to the immediate monetary returns that have been attained, there is assurance that these increases will continue far into the future.

Factual data was obtained in 1939-40 on the relationship between corn yields and depth of topsoil on field studies which were carried out by the Soil Conservation Service in cooperation with the State Agricultural Experiment Stations of Indiana, Ohio, Iowa, and Missouri. These field studies were designed to give a measure of the soil that had been removed from fields representing different slope classes with respect to degree and length, and also tell us how these losses had been affected by the way the land had been used since it was first brought under cultivation. The data obtained showed that at all locations erosion greatly reduced the amount of topsoil. The extent of the reduction of topsoil was regulated by the type of management that had been used on each field. Soil and water conservation practices were shown to check erosion and bring about immediate and continuing increases in corn yields. The relationship between soil depth, organic-matter content, and corn yields is well illustrated in the data secured on 19 cornfields near Fowler, Ind., in 1940. As most farmers have observed, there was a direct and highly significant correlation between the depth of topsoil and the corn yield, and organic matter decreased markedly as the depth of topsoil was reduced by erosion.



Loss of topsoil by erosion causes decline in organic matter and crop yields. (Based on data from 19 fields, Fowler, Ind.)

Experimental results from soil and water conservation experiment stations throughout the country show that erosion losses and runoff are excessive on all sloping land when cropped to clean-tilled crops such as corn, cotton, tobacco, and peanuts. For example, results on the Southern Piedmont Conservation Experiment Station at Watkinsville, Ga., show that approximately 5 tons of soil are lost in producing one bale of cotton on Class II land with a 3-percent slope, 29 tons on Class III land with a 7-percent slope, and 68 tons on Class IV land with an 11-percent slope. The data show further that although the average rainfall for the 9-year period 1940-48 was 52.63 inches, 11.83 inches (22.5 percent of the rainfall) were lost as runoff from land cropped annually to cotton. An average of 24.5 tons of soil per acre was lost each year in the runoff water. This was in contrast to 6.4 inches of runoff and 6.35 tons of soil lost from adjacent land where cotton was grown in rotation. The average annual loss from adjacent land in a good rotation was 5.7 inches of water and 3.24 tons of soil per acre.

An acre-inch of soil weighs about 150 tons. Thus, when soil is being lost at rates of 25 to 50 or more

***Top, left.*—Little erosion occurs with such a cover of cornstalks and crimson clover. *Top, right.*—Sericea is an excellent legume for hay and for improving soils in the southeast. *Bottom, left.*—This field of blue lupine in Georgia yielded 32 tons of green manure per acre, equivalent to 800 pounds of sodium nitrate. *Bottom, center.*—Crotalaria, a reseeding legume, supplies much nitrogen and organic matter. *Bottom, right.*—The double-cut plow method works well for killing the sod, yet keeping it on or near the surface.**

tons per acre annually, it requires but 3 to 6 years to lose an inch of topsoil. Since different degrees of erosion, as reflected by different depths of surface soil, are portrayed by different crop yields, we are able to evaluate a soil conservation program in terms of time to erode an inch of surface soil and thereby predict the degree of permanency of the soil and the rate of modification or change. Data from all of our experimental stations, together with survey data, show that the rate of erosion and reduction of topsoil has been regulated by the type of management that has been used. Soil and water conservation practices have been shown not only to check erosion, but also bring immediate and continuing increases in crop yields.

Soil and water losses can be further reduced. Although progress has been made, and farmers are shifting to a more diversified system of cropping and are making better use of their crop residues, much more remains to be done. Our research data show that more than three-fourths of the erosion from land in row crops in much of the Southeast takes place during the spring and summer months. We must find effective and practical ways of further reducing these losses, especially during the spring and summer.

At Clemson, S. C., and Blacksburg, Va., implements and methods are being tested for utilizing summer and winter cover crops and plant residues as surface-mulching material. The cultural methods are designed to prepare the land for planting, leaving the residues from the cover crops and preceding crops on the soil surface. We have found that the reduction in erosion and runoff has mainly been proportional to the quantity of cover that remains on the surface.

***Top, left.*—Cotton in graded rows provides good drainage with little erosion. *Top, right.*—This corn, grown in contour strips following sericea, yielded 53.7 bushels per acre as contrasted to 10 bushels where corn followed corn. *Bottom, left.*—Kudzu on Class IV land helped in producing milk on test farm. *Bottom, right.*—Irrigation boosted production of fescue and Ladino clover on Class IV land in South Carolina, 1950.**

These tillage methods have gone through considerable evolution and improvement as tools have been adapted and developed. A loose, clean seedbed free of clods is difficult to obtain, especially on some soils and following some crops. To accomplish this, our research men at Clemson, S. C., developed a spiked rotary implement to break clods. This implement is being used in conjunction with middlebuster shares with moldboards removed to open and prepare for planting furrows. No reduction in corn or cotton yields was experienced during the 8-year period of the test.

Where vetch and rye were plowed under and clean-tillage methods were used, runoff and erosion were less than half as much as where clean tillage was practiced with no winter cover crop. The average runoff from the tract where the mulch, disk harrow, spring-tooth tiller method was used was about one-fifth of that from the clean-tilled corn plots where no cover crop was grown. The runoff from the tract on which the mulch, disk harrow, modified middlebuster method was used amounted to one-eighth of that from clean tillage and no cover. The erosion loss from the tract where the mulch, disk harrow, spring-tooth tiller treatment was used was about one-fifth, and when the mulch, disk harrow, modified middlebuster method was used it was one-fifteenth that from the plots with no cover crop.

In Virginia the double-cut plow method, where the top 3-inch sod layer is inverted and simultaneous subsurface tillage takes place to a total depth of 7 inches, constitutes an effective erosion-control practice. Information is still lacking on the best method for preparing seedbeds following the basic tillage operation. The practice offers good protec-

tion against erosion but needs further investigation for adaptation to various soils and different cropping systems.

Studies at Raleigh, N. C., show that by controlling "row grade" for tobacco, erosion losses as well as runoff can be markedly lessened. More work is needed, however, before general application to other cultivated crops can be made. The possible savings warrant further trials.

Supplemental irrigation insures higher yields. Supplemental irrigation is under test at several locations in the Southeast. In 1950 the annual rainfall at Watkinsville, Ga., was 45.2 inches, with variations in monthly amounts ranging from 8.07 inches in October to 0.43 inch in November. Five drought periods were recorded when 14 or more consecutive days had no more than 0.25 inch of rain on any 1 day. Soil moisture was lacking for short periods in April and July. Irrigation applied during these periods gave beneficial results. One irrigation of 1.5 inches on July 3 on upland corn increased the yield of grain from 57.7 bushels to 74.4 bushels per acre — a gain of 16.7 bushels. A similar application on cotton increased the yield of seed cotton from 1,087 pounds without irrigation to 1,430 pounds per acre with irrigation. Two or more irrigations per season on pasture land has boosted grass growth and returns from beef and milk.

Soil conservation is being studied on a realistic basis. Its practical application to a typical 100-acre farm owned by the Southern Piedmont Conservation Experiment Station at Watkinsville, Ga., has been under test for the past 11 years. This farm unit has been operated by a tenant under an approved conservation plan. Very complete records have been kept of the cost of all operations and of all sales and expenditures.

For the first 6 years mules supplied the power, while for the last 5 years a one-row tractor and allied machinery furnished by the Agricultural Engineering Department of the University of Georgia have been used to produce the crops, except for harvesting the small grain, lespedeza, and sericea seeds, and baling the hay. The tenant used the tractor each year on the station to repay his share of this expense.

The operation of this farm has supplied much practical information and has attracted wide interest throughout the Southeast. All the farm's cropland is rotated and supporting conservation practices are used. Last year there were 7.5 acres of cotton, 10.6 acres of corn, 21 acres of oats, 7.5 acres of wheat, 25.5 acres of Kobe lespedeza, 14.7 acres of perennial hay, 12 acres of improved pasture, and 1.2 acres for buildings and a garden. Ten milk cows were kept on the farm, and in 1950 they produced 58,669 pounds of milk, testing 5.3 percent butterfat. The tenant has had a satisfactory income each year, and a good return on the investment has been received by the landlord.

There has been gratifying progress, true, but much remains to be done. Farmers throughout the country, and especially in the Southeast, have found it profitable to use larger and larger quantities of mixed fertilizers. It is obviously practicing poor economy, however, to tolerate the high losses of plant nutrients through erosion that are occurring simultaneously with the return of these nutrients in purchased fertilizers. By reducing erosion, the actual return from fertilizers per dollar expended can be markedly increased. Fertilizer applications have had to be increased repeatedly, mainly because of the large quantities of plant nutrients that are lost through crops and erosion.

The Southeast is making headway. This is evidenced by the reduction in acreages of corn and cotton, which are erosion-inducing crops, and a corresponding increase in the acreages of small grain and hay, which allow much less erosion. In spite of substantial acreage reductions of corn and cotton, the per-acre yields have been sufficiently increased so that the total production is markedly higher. Livestock numbers have more than doubled, as compared with the 10-year period 1927-36, and their annual value has increased 741 percent.

It is imperative that we be on the alert with our research so that we may find more effective and more practical ways of conserving the productivity of the soils. This is especially true of the Southeast, where emphasis must be placed on the improvement side, since so much erosion and soil deterioration have already occurred.

Obviously, in this fast-moving scientific age, with ever-increasing demands for food and fiber, we can ill afford to sit back complacently and say, "We know enough now. Let's apply what we know." By all means, we want to speed application, but we must also increase our research efforts to find more effective and more practical ways of conserving and improving the productivity of our soils if we are going to maintain our high standard of living.

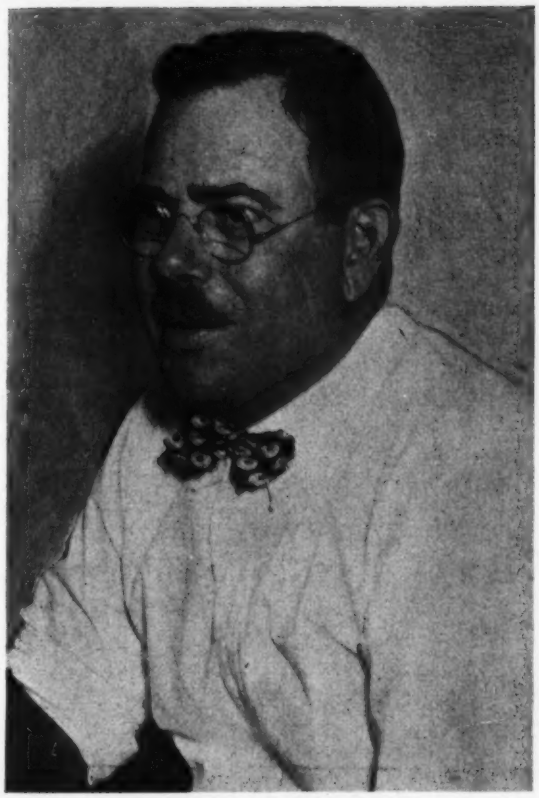
1952 DISTRICTS CONVENTION

WATERS S. DAVIS, Jr., League City, Tex., rancher, was reelected to his third term as president of the National Association of Soil Conservation Districts at the sixth annual convention of the National Association of Soil Conservation Districts in Cleveland, February 25-29.

Attendance at the convention was estimated at more than 1,800, with representatives registered from every State and Puerto Rico. Capacity audiences heard a series of nationally important speakers, including Secretary of Agriculture Charles F. Brannan, Governor Earl Warren, of California; Dr. Robert M. Salter, Chief of the Soil Conservation Service, and Senator Robert A. Taft of Ohio.

But, in addition to the speech making, it was a real working convention, too. Committees brought out detailed, thoughtful reports on subjects ranging through cooperation with public-land agencies, watershed programs, legislation, education, district programs, publicity, and finance.

Nor was it purely a man's convention. More than 125 fully registered participants were women, and they reelected Mrs. Don G. Fredericksen, of Gooding, Idaho, as president of the ladies' auxiliary —see the "District Profile" by J. Boyd Price in our January 1952 issue. A special ladies' program including speakers, luncheons, and tours, was a feature of the convention.



Reelected: Davis

Delegates and observers were high in their praise for the convention arrangements and facilities provided by the hosts—the Ohio Federation of Soil Conservation Districts and the Cleveland Farmers' Club of the Cleveland Chamber of Commerce.

A BANK FINDS WORK ON THE LAND

By C. C. COOPER, Jr.

I CAN, with all sincerity, tell you that our bank has as much regard for, and places as much value on, soil conservation as do the most enthusiastic exponents. It would indeed be a short-sighted policy to ignore or fail to assist in every way possible a program which is promoting the value and efficiency of the principal industry in the area it serves.

As a community prospers or declines, so do its banks. Soil conservation measures, wisely conceived and properly applied, produce the same benefits for a man's future and security as do sav-

Note.—This article is taken from an address by the agricultural field representative of the Valley National Bank of Arizona at a meeting of the Arizona Association of Soil Conservation Districts.

ings accounts. Remembering this analogy, a bank cannot fail to appreciate the importance of soil conservation.

Another way to appraise this regard would be to realize that the value of a bank's assets are closely related to the assets of the rancher or farmer. For example, when a bank makes a loan it shows that loan on its books as an asset. The quality of that loan or asset is largely dependent upon the quality of the land, crops, or machinery behind it. We can assume, of course, that the loan would not have been made if there were any doubt of the ability or integrity of the borrower. These last two factors are of the utmost importance in qualifying a loan but, unfortunately, they do not show up in the collateral file. A bank examiner can't see them nor run them up on an adding machine. These men value our loans during periodic examinations largely on the basis of the value of our collateral, and assume the ability and integrity factors are there.

And so you can see how important the proper application of soil conservation is to the bank because of the improvement and the protection it promotes for our banks and this State's most valuable asset—productive soils.

The Valley National Bank has always, and will always, do everything possible to assist soil conservation and the soil conservation districts. Let me now point out some of the ways in which our bank is working with you.

First of all, it has *created* loaning methods which directly finance certain soil conservation practices. I'll discuss these in a little more detail shortly.

Next, its loaning officers give great weight to the existence of soil conservation measures on a piece of property, when analyzing the credit factors involved.

Further, we make loans to districts and to individuals for the development of machinery, equipment, and services for carrying out soil conservation work.

The bank also takes an active interest in the progress of the soil conservation districts, several of its officers being members of a soil conservation district. Personnel of the bank meet with conservation groups to talk with them about mutual problems. You will find that the bank instigates and encourages favorable publicity for this work. The contribution of the bank along these lines is often hidden from general view. The reason for this anonymity stems partly from the fact that banks can't discuss the business of their customers with others, nor can it publicize its accomplishments too much without giving the appearance of bragging about a job it is supposed to do.

Now to go back to some of the direct ways we are able to finance soil conservation measures. At present we make these loans in three ways—by taking an assignment of the cooperator's PMA payment; by increasing the amount loaned under a crop mortgage, where production justifies it; and by direct loans to soil conservation districts for equipment.

Indirectly we assist in the financing of soil conservation measures by processing loans to farmers and ranchers for the insurance companies. We do the investigating, qualifying, and handling of applications for long-term money from certain insurance companies. This type of loan gives the operator an opportunity to obtain low interest, long-term money upon which he can build a conservative program over a period of years.

We also indirectly add to a man's ability to obtain financing for conservation measures by giving considerable weight to the fact that he is a cooperator. We do this because we know that we can depend more on the care of his productive assets. For instance, we can be more assured of an improving supply of feed and water in a case of a cattleman who is a cooperator. Similarly, we can give weight in our evaluation of the earning capacity of a farm that has a soil conservation plan because we consider it an indication of sound management. In another way, we indirectly aid soil conservation by assisting in the development of ventures whose purpose it is to perform certain conservation work or who supply equipment or materials related to it.

We offer incentive to the use of conservation practices by giving preferred credit positions to the cooperator. We *insist* on the use of soil conservation practices where long-term credits are involved.

We encourage the participation of a borrower as a member of the soil conservation district. We encourage the formation of soil conservation districts. We follow, analyze, and encourage legislative measures which are related to the success of conservation. We offer financial advice to the districts. We create special loaning techniques for granting them credit on an installment basis.

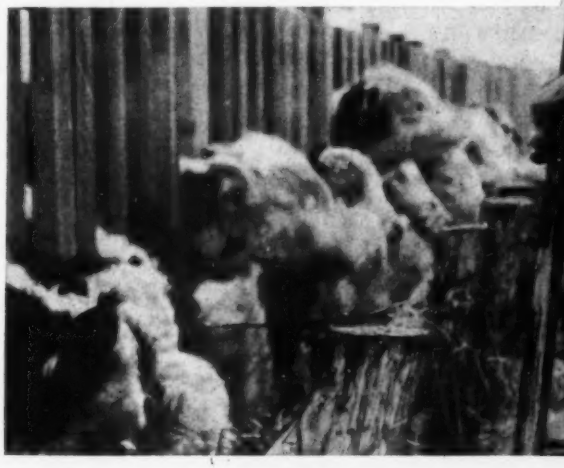
DISTRICT PROFILE

GEORGE BARTON of UTAH

George Barton, at the age of 29, is the youngest director of the National Association of Soil Conservation Districts. His experience and background well qualify him for the position.

Barton was born and raised in Manti, Sanpete County, Utah, where he has been herding sheep, punching cows, and farming all his life. In this arid and mountainous, yet productive, country livestock raising is the main industry.

Barton, his father, and his two brothers are in partnership. Theirs is a complex and extensive enterprise. They run a few flocks of sheep and herds of Hereford cattle on a range. This includes summer range on the National Forest and private mountain ground, winter ranges on the Taylor grazing lands in western Utah, and privately owned range lands at medium elevations for spring and fall grazing.



The Bartons also have become very active in the registered-herd business. They run a herd of registered Hereford cattle, and have made a specialty of purebred Columbia sheep. They have shown and sold their Columbia ewes and rams at the leading livestock shows throughout the West.

Due to the long winter in the intermountain country it is necessary to raise considerable winter feed for these purebred herds. Therefore, the Bartons must also be farmers. All farming land in this area is irrigated from the mountain streams and pump wells. The limited amount of available farm land and the shortage of water make conservation farming a necessity.

The variety of his operations gives George a well-rounded, practical background for his broad responsibilities in the field of soil conservation.

Proper land management on the farm and on the range, he says, is the key to ultimate success. A strong advocate of proper range management, George Barton wants to see the range produce good feed, and he wants, too, to see the livestock

business become a more stable and secure industry in the West. He knows that good range management is the key to stability, but he is afraid of and vigorously opposes the idea so prevalent in the West these days that the only way to improve the range land is to remove all the livestock. He believes that conservation and utilization must work together.

Public control of public lands is necessary, he agrees, but the cattle and sheep growers who use those lands need to have some assurance of security in their future use before they will put forth too much money and effort in range improvement. He believes that most livestock people are more conservation-minded than is commonly believed. This, he says, has been demonstrated by the interest the range livestock people have shown when working on their private lands in cooperation with soil conservation districts. There is plenty of room for range improvement on privately owned ranges, says Barton, and this is one place where the soil conservation districts can make a big contribution to the future of the western livestock business.

On their private lands the Bartons have carried on an extensive range-seeding program in an effort to assist range recovery and improve range-plant vigor.

It was through this work that George became acquainted with the soil conservation district movement. He has been a member of the Sanpete County Soil Conservation District board of supervisors for several years and for the past 2 years has served as chairman. He served one term on the State Soil Conservation Committee, and for the past 2 years he has been the vice chairman of the Utah State Association of Soil Conservation Districts. For the past year he has been one of the directors of the National Association.

In addition to being an ardent conservationist, Barton is active in civic and church affairs in his home county. He believes that to be a good citizen one must be a real conservationist. He recently stated, "Until we get every last person engaged in agriculture to understand and truly believe our basic soil conservation objective, there will be a big job ahead for everyone participating in soil conservation district work. We must believe that truly 'the earth is the Lord's and the fulness thereof,' but the responsibility for its stewardship is vested in man."

—C. W. ZUMWALT.

GOOD PASTURE *from* BRUSH LAND

By HERB BODDY

P. E. "PETE" CARLSON—part-time farmer of El Dorado County, Calif.—has an improved dry-land pasture which turns out 20 to 30 times as much forage as the old brush land.

Carlson works the day shift with the county highway department. He has to wedge in his farm chores the best he can. Since buying his 80-acre farm in 1943, it has been touch and go, raising chickens and fattening calves by twilight and on week ends. He has had to make his free time really count. By dint of careful planning he is fast putting his sloping lands in top working order.

Pete Carlson's sprinkler-irrigated, well-fertilized bottom-land pasture has been a money maker from the start. It's the steep uplands above his home and barn that have been tough to handle. Slopes are from 10 to 35 percent and until he began turning them into pasture 5 years ago, they had a dense brush cover.

Of course, Carlson wishes he had more good bottom land. What farmer doesn't? But, with no new flat land close by, and so many hilly acres available, he had only one course open — he must make the uplands pay.

Carlson was hopeful, but not too optimistic in 1946 when he called on directors of the El Dorado Soil Conservation District for help in turning his

Note.—The author is in the current information division, Soil Conservation Service, Portland, Oreg.

Pete Carlson and A. G. Carns inspecting dry-land pasture plants in early spring of 1951.

Glimpse of Carlson's dry-land pasture in early spring of 1951. This field was once brush and trees.

brush land into pasture. When Art Carns of the Placerville SCS staff came out to his place, he found the rancher in a receptive mood. Carlson started right in clearing a 13-acre brushy piece. As soon as the brush was off, he worked up a good seedbed by disking and plowing.

By the fall of that year, Carlson was ready for drilling. He used a seed mixture of Hardinggrass, burnet, and bur-clover, which was well adapted to the dry lands of northern California.

The next spring, Carlson got a first cutting of 12 tons of hay from the field. The following spring, he grazed six head of beef there. Then he let the stand grow and harvested 18 tons of hay in June.

In establishing the seeding, Carlson says the only priming he did was to broadcast 200 pounds of superphosphate in February 1948.

Hardinggrass has caught the eye of Carlson as a top forage producer. It grew higher than his horse's head in 1947. He recalls how his annual hay crops of vetch and grain froze out during the bitter cold winters of 1949 and 1950. In spite of the cold, his Hardinggrass still produced 1 ton of hay per acre, half its normal yield.

The prolific growth made by the dry-land seeding is reflected in results of field checks conducted by Carns. He stretched a series of 3-foot-square boxes across the 13 acres. Grass in the boxes was clipped during the growing season to simulate grazing. Carns weighed each test, cutting off green forage, and then dried it to get the hay weight.

Production records listed green weight on a per-acre basis as 4,833 pounds. The air-dry weight of hay, on a per-acre basis, figured 3,736 pounds.

Using a net figure of $15 per ton for hay harvested and a mark of $2 per animal-unit month for grazing, Carlson's planting paid for all costs at the end of 2 years. His field should continue to produce at a good rate for 10 to 15 years or more.

Mr. and Mrs. Carlson, with calves raised on their farm.

ALL MUST WORK TOGETHER TO MEET PRODUCTION GOALS

By HON. CLARENCE J. McCORMICK
Under Secretary of Agriculture

THE TIMES call for 100 percent teamwork—from everybody—every Soil Conservation Service technician, Production and Marketing Administration committeeman, county agent, or Extension specialist, soil conservation district supervisor, Farmers Home and Farm Credit Administration employee and farmer committee people, and so on.

The farmers of Ohio and the rest of the Nation have been asked to meet in 1952 the highest production goals in history—more corn, more barley, more wheat, more grain sorghums, and another big crop of cotton. At the same time, they are going to be handicapped in meeting these goals by a smaller labor supply and a tightening situation in such other important farm production facilities as machinery and parts, fertilizers, and pesticides.

Moreover, nobody knows for how many years we may be called upon to go on producing at the record or near-record pace American agriculture has been setting for the past decade. We do know that, no matter how soon longed-for peace returns to the world, the farmers of the United States will have to continue to produce in abundance. That will be necessary in order to maintain our own fast-growing population's high standard of living and to meet export and other demands.

It follows, then, that we are going to have to keep the American farm plant in top producing condition. To do this, we must drive ahead with agricultural research without interruption. We must take the fullest advantage of conservation and other technical knowledge. We must preserve the democratic, farmer-administered conservation machinery in the soil conservation districts and the Agricultural Conservation Program. We must likewise maintain farm credit, rural electrification, and other facilities which, all together, make possible an increasingly efficient farm production job.

In short, we must keep looking ahead for ways of giving more and more service to American agriculture—to the farmers of Ohio and the Nation—per dollar expended.

Perhaps the most promising step we have taken in a long time, Department-wise, is in the practical coordination of our agricultural resources conservation services, under the Secretary's Memorandum No. 1278 of a year ago. I believe that we have in this an opportunity that some of us may not fully appreciate, despite the fine progress that has already been made in putting the plan into effect. I say this by way of emphasizing the immediate and potential importance of the coordination move, especially with respect to the successful development of our Agricultural Resources Conservation Program in the years to come.

I want to commend you Soil Conservation Service men for the way you have pitched in and helped in putting the provisions of Memorandum No. 1278 into operation from the outset. I am sure that the farmers with whom you work have observed how the representatives of our Department agencies concerned have tightened up their lines of teamwork still further, and are speeding the conservation job along accordingly.

The progress that has been made in housing Department agencies in the same town and same building has been gratifying. Ohio is one of the States which already have consolidated State offices of the largest agencies. And I noticed that up to December the consolidation of FHA, SCS, and PMA offices in the counties was well along, with 43 percent of the consolidations accomplished by that time. I know I hardly need to remind you district conservationists of the space and other problems that very often are involved in providing this desirable one-stop service for the farmers who have business to transact with more than one agency.

I hope that all of you who still have some of those problems to work out will push ahead with a view to completing the office consolidations as soon as

Note.—These remarks are from an address made by the Under Secretary at a State meeting of Soil Conservation Service district conservationists in Columbus, Ohio, Feb. 7, 1952.

Hon. Clarence J. McCormick.

possible. It certainly will be a real satisfaction to farmers and Department people alike when the job is finished and the offices situated in any given county are brought together—PMA, Soil Conservation Service, Farmers Home Administration, Federal Crop Insurance Corporation, and any others located there.

The farmers you serve also are interested in considerably more, of course, than the physical office arrangements. They are interested in the still closer cooperation and more unified service in these agencies' conservation work with farmers. That is something else which this realignment of Department facilities in the States and counties will produce.

For example, farmers having complete farm plans worked up in soil conservation districts are expected to use these plans as a guide in determining the conservation practices to be carried out under the 1952 ACP. By the same token the county and community committeemen need to do the best possible job of screening applications for Soil Conservation Service technical assistance, to save the time of you conservationists, and to assure sounder programs.

As a result of such coordinated efforts in carrying on our conservation programs, we will have faster application of soil and water conservation measures on the land. Naturally, there are numerous details to work out and local procedures to develop in order to arrive at the smoothest working operation; but the reports so far show even more progress than was anticipated by this time.

I have in mind, for instance, the revision that has been made in the basic technical planning procedures to help meet the increasing demands for technical assistance from soil conservation district and ACP participants. I understand that your conservation planning already is being expedited as a result. That, of course, is because under the revised system the farmer is able to go ahead immediately with his simpler practices while he is developing his complete farm plan of permanent conservation.

This in no way weakens your long-established basic Soil Conservation Service policy of treating and using land according to need and capability. To the contrary, Memorandum 1278 specifically states that to be the conservation objective of the Department.

It also strengthens the Department's support of the farmers' soil conservation districts — that is, by charging both the Soil Conservation Service and the Production and Marketing Administration to encourage jointly the creation and development of such districts. Although more than four-fifths of our farms and ranches and three-fourths of our farm land are covered by approximately 2,400 districts now, every farm and every acre of farm land in the country should be in such districts.

It has been the Department's policy to cooperate with soil conservation districts ever since the first ones were voted into being under State enabling laws in 1937. It subsequently has made the services of your own and other agencies available to the districts, at the request of their local farmer supervisors, through formal memoranda of understanding. The farmers in these democratically organized and democratically managed districts have amply demonstrated that if we provide them with sound and efficient technical and other assistance, they will keep pace in leadership, progress, and production accomplishments.

That is the cue for all of us in turn to bring all of our farm program facilities to bear upon the common farm conservation problem. Perhaps the most obvious opportunity for doing this is in tying more closely together the technical assistance of the Soil Conservation Service and the financial assistance of the Agricultural Conservation Program. I am sure all of you have observed that farmers generally find they reap the maximum conservation benefits when the services of both programs are used simultaneously.

We can't afford to overlook *any* practicable means of speeding along the conservation job. We must improve the productive capacity of the Nation's land if we are going to meet increasing demands upon it when they arise. Our soils are capable of supplying the huge demand now being placed upon them—if we manage them right. And there is abundant scientific evidence and practical history as well to show that we *can* make our soils produce enough to meet current needs, and also to provide for the long pull.

What we have done in the past, however, may not be good enough for the future. Thus meeting our 1952 production goals would fill all essential military and domestic requirements this year, and provide for exports at current levels. But it would not build up reserves of feed grains and some other commodities to desirable levels. Although sound land-use practice is a limiting factor in further cropland expansion, it would be short-sighted to sacrifice our remaining productive land even for this worth-while purpose.

Also, we need always to remember that land and *water* must work together if we are to have sustained productivity. Ohio has just experienced the latest of the Nation's recurring, costly floods. Earlier in January, it was southern California that drew the flood headlines. Last summer, it was the "billion dollar flood" in Nebraska, Kansas, and Missouri. And every year, in different parts of the country, floods along the smaller tributary streams take a toll in life and property. They may cost an aggregate of three times the cost of the less frequent major floods like those on the Ohio and the Missouri.

There have been major floods, of course, since the earliest days of record. The great Ohio floods of 1884 and 1898 still are not forgotten. Neither is that of 1913, when the overflowing Scioto River brought Columbus its most destructive flood. But, as man has determined to live and build on the flood plains or wherever he wishes, he likewise must learn to manage the land and water within his control in such a fashion as to reduce flood damage and destruction to a minimum.

Flood protection is a vital necessity—for the farms as well as the cities. Flood prevention and control must begin by treating land and water together as a part of a broad, multiple-purpose effort in which the land and water resources are conserved and utilized to serve the various needs and purposes of the people. We need to deal with water management and control from its very beginning on the land where rain and snow come down and water starts to flow downhill. And that is where we need the water most—right where it falls.

Watershed conservation treatment has been basic in your Soil Conservation Service program from its start. Watershed management, important in itself, is necessarily a part of a broader program in which structural measures in the main stream and in the tributaries have a necessary place. There is nothing basically incompatible about the objectives of both kinds of work, watershed management and structures for regulation and use of water in the channels.

But it is necessary that all structures and measures carried out under both kinds of work be designed to fit into the most effective total integrated program to serve the needs of each drainage basin and its subdivisions. This fact points up the need for joint and coordinated planning in the river basins.

The Department of Agriculture has worked for many years in discharging its responsibility for resource protection and use in various river basins. We have directed our efforts at conservation land and water use on the forest lands, grasslands, and cultivated lands, and the waters which feed or drain them.

This has involved, and will continue to require in greater degree, the fullest cooperation and teamwork among our own agricultural agencies and programs as well as others, local, State, and Federal. The importance of this complete watershed approach has been demonstrated over and over. Here in Ohio, the success of coordinated treatment and development of the Muskingum watershed, through the Muskingum Watershed Conservancy District, has become an outstanding example of community, State, and Federal cooperation in this field.

HIGHLY PROFITABLE.—Looking back over 8 years' experience with conservation farming on his 105 acres near Bel Air, William Choate, dairy farmer in the Harford (Md.) Soil Conservation District, recalls numerous gullies on his place, one of which would hold a wagon and a team of horses.

"Productiveness of my farm has been restored so effectively that I get from 30 to 35 percent more crops from every acre that I plant," says Choate.

SEED ALONE CAN MAKE GRASS PROFITABLE

By A. E. McCLYMONDS

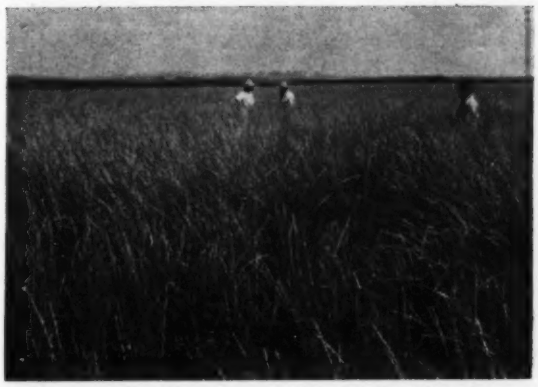
GRASS has been eulogized as the forgiveness of Nature, but more important, it is one of the soil and water conservationist's best tools.

Its uses are many, among them the protection of waterways through which excess water is routed, and the improvement of soil structure and organic matter in cropland.

But while doing its conservation tasks and producing increased pasturage and hay, grass has also provided farmers and ranchers of the Northern Great Plains with a tremendous money crop through seed production.

This is shown by a report of the Bureau of Agricultural Economics for the year 1950. The Northern Great Plains States—Kansas, Nebraska, North and South Dakota, Montana, and Wyoming—were among the leaders in the production of more than 300 million pounds of seed of 13 grasses.

These States produced all the seed of two species, Russian wildrye and buffalograss, reported for the Nation in 1950. Largest production was smooth bromegrass seed which totaled 23,260,000 pounds in the Northern Great Plains region, or 79 percent of the Nation's output. Nebraska was way out in front with 14 million pounds.



This intermediate wheatgrass was seeded in 20-inch rows specifically for seed production. It is on the land of A. Rand and C. E. Hageman, near Hawk Springs, Wyo., down in the South Goshen Soil Conservation District.

This grass seed was harvested from cropland seeded to grass-legume mixtures temporarily as part of the crop rotation, from grassed waterways, from pastures on which grazing was deferred, from odd areas that had been seeded to grass, and from plots where the grass had been seeded in rows and cultivated specifically for seed.

Note.—The author is regional director, Soil Conservation Service, Lincoln, Nebr.

Seed production for all 13 grasses in the Northern Great Plains States

Kind of seed	Amounts	Portion of United States total	State in region
	Pounds	*Percent*	*Ranking*
Bluestem mixtures	220,000	9.3	Kansas, third
Smooth brome	23,260,000	79.0	Nebraska, first; Kansas, third; North Dakota, fourth; South Dakota, fifth; Montana, eighth
Buffalograss	81,000	100.0	Kansas, first; Nebraska, second
Blue grama	120,000	21.8	Kansas, second; Nebraska, third
Side-oats grama	200,000	54.0	Kansas, first
Sand lovegrass	350,000	51.0	Kansas, first; Nebraska, fifth
Crested wheatgrass	5,400,000	92.0	Montana, first; Nebraska, second; South Dakota, third; North Dakota, fourth; Wyoming, fifth; Kansas, eighth
Intermediate wheatgrass	190,000	56.0	Nebraska, first; Wyoming, South Dakota, tied for fifth
Slender wheatgrass	120,000	75.0	North Dakota, first
Tall wheatgrass	30,000	32.0	Nebraska, third
Western wheatgrass	103,000	89.5	South Dakota, first; North Dakota, second
Canada wildrye	44,000	92.0	North Dakota, first
Russian wildrye	30,000	100.0	North Dakota, first

This waterway was once a gully. Now it produces a good harvest of hay; bromegrass, reed canarygrass, western wheatgrass, alfalfa, red clover. And it provides a safe avenue for disposal of excess water from adjoining land. It is on the farm of H. N. Erskine, Cass Soil Conservation District, Nebr.

Increased grass-seed production was largely the direct result of the establishment on the land of sound soil and water conservation plans worked out by the 113,800 cooperators with soil conservation districts in the Northern Great Plains region.

These cooperators seeded over 1,431,000 acres to grass to retire from crop production those parts of their land found unsuited for cultivation. Over a million acres of this was seeded for pasture and range. The rest was for hay.

They also seeded 109,000 acres of grassed waterways, and over 4 million acres of cropland to grass and legumes as part of the long-time crop rotation.

The production of the seed of adapted grasses is an important development for soil and water conservation in the Northern Great Plains.

Seeding done thus far is only part of what has been planned by district cooperators, and a relatively small fraction of what is needed throughout the area. Greater progress would have been made but for one thing—too little seed of adapted varieties.

It has been part of the work of SCS to join with State colleges and others to encourage the production of grass seed. The Service has also had an important part in the propagation of newly introduced and developed grasses, and in the development of ways and means of harvesting, processing, and planting the seed of native and introduced grasses.

Establishment of grassed waterways, from which much seed is harvested, is a general practice in much of the Northern Great Plains region, but something of a problem is posed on those farms with little or no livestock, when it comes to seeding down the land unsuited for cultivation or using grass in the crop rotation. Experience has proved that grass-seed production is a profitable enterprise that fits into the operations of such units. Even farmers with ample livestock are finding that the use of odd areas for seed production is desirable.

One of these is John Fleming near Hartington, Nebr., a cooperator with the Cedar County Soil Conservation District. He and his partner-son have taken out of cultivation several small areas that did not fit readily into the new field lay-out.

"Two years ago," he said, "we fertilized the odd areas with 100 pounds of ammonium nitrate fertilizer to the acre. In return, we got 3,500 pounds of crested wheatgrass seed from 6 acres and 3,000 pounds of bromegrass seed from 10 acres.

"As for crops? Well, even though we've seeded down quite a bit of former cropland in waterways, in odd areas, in the crop rotation, and on land not suited for cultivation, we still are raising more crops than before."

In North Dakota, Gerhard Lund, who is a cooperator with the Rolette County Soil Conservation District, has found that grass-seed production from his land farmed in a strip crop-grass rotation yields a pretty good income while it is in grass. He finds that the fields are like new land when they are plowed after being in grass a few years.

George L. Whitcomb near Cedar Point, Kans., cooperating with the Chase County Soil Conservation District, seeded grass on 100 acres that produced poorly in crops. Three years ago he began reaping the income when 90 acres of bromegrass yielded 39,400 pounds of seed and 10 acres of intermediate wheatgrass yielded over 1,500 pounds of seed. The bromegrass was fertilized.

A South Dakota illustration concerns crops after grass on cropland. In 1950, 4 years after he seeded bromegrass-alfalfa on a field, Clifford Harn, cooperating with the Marshall County Soil Conservation District, broke the land and put it to corn. The corn crop was half again what was considered a good average for the area. While it was on the land, the grass also paid well.

The income from grass-seed production should encourage more farmers and ranchers to produce the seed of adapted varieties. A sufficient supply of this seed is vital to the conservation of the soil and water resources of the Northern Great Plains.

Regional Study on Farms in Three States Points Out

SOIL CONSERVATION NEEDS

Prepared from North Central Regional Bulletin No. 23. Conservation Problems and Achievements on Selected Midwestern Farms.

SUCCESSFUL soil conservation programs result from a combination of good land-use practices, water management, crop and livestock utilization, and a coordinated over-all plan for the farm. This was pointed out in a study of conservation problems and achievements on selected midwestern farms in 12 States* of the north central region.

Farms used, selected from the group participating in soil conservation practices and keeping farm records, were located in Illinois, Ohio, and Wisconsin. The conservation program on each of the farms studied could have been improved in one or more aspects. But, in each case, income at the end of the study period was better than at the beginning even after allowance had been made for changes in the price level. In most cases, an improvement was evident soon after the beginning of the conservation program.

The Illinois case farms typify an area of moderately large commercial farms on productive land of moderate slope. Conservation problems found on these farms are quite common on cash-grain farms in much of the Corn Belt. They include sheet and gully erosion on sloping lands, drainage on level lands, and fertility maintenance on most soils.

The Ohio and one of the Wisconsin farms offer typical problems of hilly areas. Soil erosion is acute, accentuated by the need for as large as possible acreage of cropland on these small units. Although the general problem presented by these case farms in Ohio and Wisconsin is similar, possibilities for meeting them are different. Dairying is a more profitable enterprise on the Wisconsin farm

Locations of these farms were selected to represent the different types of farming carried on in the regional area.

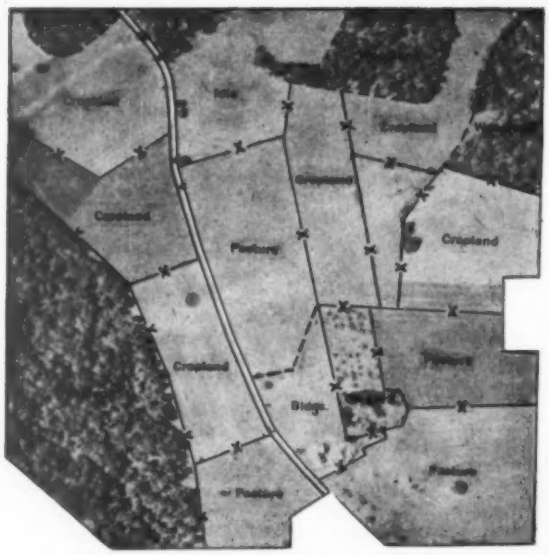
than in the Coshocton County area of Ohio, where farms studied in that State were located.

A Grant County, Wis., farm illustrates the conservation problem of a somewhat larger hill farm. In particular, it points out the greater range of alternate enterprises that are economically possible on larger units.

On all the farms, the study indicated that changes made in adopting the conservation program such as use of grassed waterways, contours and strip farming, investments in fertilizer and redesigning of the fields paid off in higher net income. The addition of a beef-feeding enterprise, a dairy herd, or poultry flock to use the additional grass, grain, and labor that became available was important in changing this income. In many instances the additional enterprise could be fitted in to take up the slack during off seasons or to furnish enough work to keep another person employed full time in the business.

Tenure problems are one of the major "stumbling blocks" to the adoption of conservation practices in the Corn Belt. Making changes in farm organization, such as shifting cropland to hay and pasture, increasing livestock numbers, and payment

*Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.



Typical Mill Creek, Ohio, farm before conservation plan.

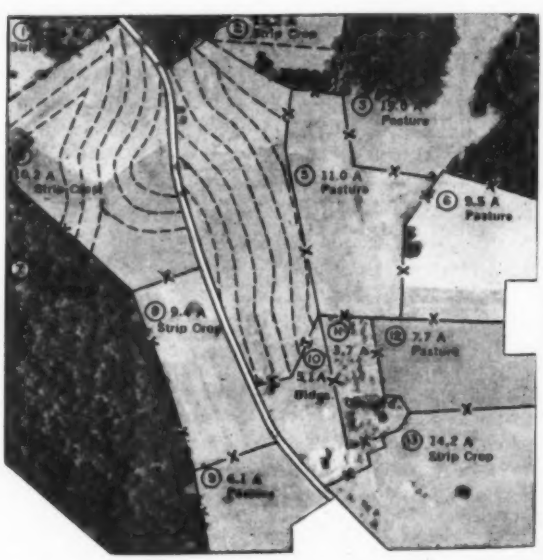
for fertilizers, all bring up questions on how to distribute costs and income.

Absentee landlords who want an immediate high return on their investment are not willing to make the adjustments that would allow them to improve their farm income over a period of several years. On many farms the tenant is also interested in short-run profits. This is especially true if he has only a 1-year lease with no assurance of renewal or a lease so designed that he may have to shoulder the major portion of fertilizer and other conservation costs.

One answer to these problems is a lease providing for sharing both crops and livestock. This gives landlord and tenant an incentive to adopt those practices that will give the highest net return over a period of years. It also makes it possible for both to share an equal portion of the costs and returns.

Capital improvements, such as erosion-control dams, new barns, fences, and other permanent or semi-permanent fixtures that are needed to make full use of the conservation program and its production, should be written into the lease. In the case of the McLean County, Ill., farm, the landlord made these expenditures and the tenant made the recommended land-use changes — soil-fertility improvement, new seedings, waterways, and terraces. Many of these problems must be worked out between the landlord and tenant to fit their individual needs.

Problems on the six hill farms in Coshocton County, Ohio, indicate it's difficult to measure exactly how much a conservation program contributes to income. Practices applied to these farms did not involve severe changes in land use, or heavy capital outlays. Yet increases in yields have been substantial. As these farmers adopted good conservation practices, they learned to improve their farming in other ways. With no changes in total acreage and a reduction of almost 12 percent in cropland, they increased the size of their business, in terms of volume of production, by 75 percent. This increased production is evidence that



Typical Mill Creek, Ohio, farm and field arrangement after adoption of a conservation plan.

these farmers had the capacity to assume greater managerial responsibilities.

The problems these farmers have encountered in developing their conservation programs explain why farmers in similar circumstances have not made so much progress. Small farms predominate in the area. In 1945, the average-size farm in Coshocton County was 128 acres, and 46 percent were smaller than 100 acres. Land is rather hilly, with slopes up to 20 percent being used in the rotation farming. Principal crops include wheat, corn, oats, and hay. Beef and dairy cattle, poultry, and hogs make up the livestock enterprises.

Principal conservation problems in the area are associated with soil erosion and declining soil productivity. These are aggravated by the small size of farms, which makes it difficult to reduce the acreage of intertilled crops.

However, during the 13-year period, net real income increased by about 50 percent on these six farms. Although net income dropped during the first 2 or 3 years of the conservation program, it was due largely to increased conservation costs. Adoption of conservation practices alone will not insure a satisfactory income on all farms. Some farms are too small, or inefficiently managed, to provide adequate incomes. But on small farms conservation practices, if properly employed, should help to improve income even though it may still be inadequate.

FLY YOUR FARM

By R. J. AMSTERBURG, Jr.

THE FARMERS of Mason County, Mich., are really looking forward to the Western Michigan Fair next year, and it's all due to an idea developed by two members of the local unit of the Soil Conservation Service. The idea of an aerial view of a farm at a reasonable price developed when Ralph Lowery, work unit conservationist, and William Brozzo, conservation aid, were checking some aerial photos to be used for a display at the Western Michigan Fair.

The idea of "flying your farm" to see the problems of erosion and land use was then placed before the directors of the Mason County Soil Conservation District. The directors agreed to sponsor the tour, and it was up to the technicians to lay out the routes to be flown.

Ralph Lowery then went up on an inspection flight of the county and laid out a route which would include conservation practices, erosion problems, and features of special local interest. Some of these spots would be included with the aerial trip over the farm of the person on the flight.

Jack Norton flew the plane, a four-place job that could be used at the local airport, which is immediately in conjunction with the fair grounds. Tickets were sold at the district booth for $2 each, and the buyers walked over to the airport for the trips. To make this low price possible, it was necessary to take people from the same part of the county simultaneously. This gave the pilot an opportunity to fly across more of the county in a short period of time.

"Flying your farm" became an overnight sensation in the 5 days that the fair ran; over 200 farmers from Mason County were able to see not only their own farms, but also the conservation practices that had been established by their neighbors.

One of the oldest farmers to take the tour was Floyd Wood, chairman of the district board of directors. Mrs. Frank Barclay, a reporter for the local newspaper, also took the tour. She is 70 and the owner of a farm on which she is planting pine trees on contour.

The trips were not confined to grown-ups. In some instances whole families went along. For many of the younger people, it was the first trip by plane. They were able to see some of the conservation practices that they studied in school.

Points of particular interest were contour tree planting, such as the 6-year-old plantation of Archie Wadel in Riverton Township; and the contour strip-cropping system of Ted Lloyd, in the northern part of the county—a farm where the potato yield increased from 125 bushels per acre to 440 bushels per acre under conservation farming, in 2 years.

Sights such as these whetted interest in the local soil conservation program and made some of the local urbanites more conscious of the problems faced by county farmers. The local businessmen, as a result, also are now becoming more soil conservation conscious.

Some of the district cooperators already are asking that this type of tour be made available again at next year's fair. Plans are under way for a still more intensive form of tour, and it is expected that yet more people will make the flights. This will enable Lowery and Brozzo to do an even better job of soil conservation.

TOSS-UP FOR TOPS!—Harold and Max Kuehl, who operate farms south of Ormsby, Minn., recently were selected as Martin County Soil Conservation District's most outstanding soil conserva-

Note.—The author is work group soil scientist, Soil Conservation Service, Ludington, Mich.

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tionists. Details of the close decision on which the plaque was awarded are as interesting as their successful soil conservation work. The two farmers' programs matched so closely that the distraught supervisors were ready to flip a coin. But before anyone could dig up a coin, Farm Planner I. H. Burnison suggested naming both Harold and Max as top soil savers for 1951.

Who gets the plaque? Well, there won't be any dispute about that either. Harold and Max are brothers who operate adjoining 120-acre farms. If one brother gets lonesome for the plaque and decides he wants it on his wall for a few days, all he has to do is borrow it.

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J. A. Bridwell.

A FARMER EXPLAINS.—When J. A. Bridwell, chairman of the board of supervisors of the Spartanburg (S. C.) Soil Conservation District, was asked to talk before the Spartanburg Woman's Club, he explained concisely how a district operates, using his own district as the example. Bridwell's talk follows:

"There are three things which I should like to stress. (1) I am a farmer. (2) I am a supervisor of Spartanburg Soil Conservation District. (3) I am NOT a Government employee, and I am NOT on a Government pay roll. The service I render as a district supervisor is as free as the service you render as a member of this club.

"I make these statements to show you the relationship of farmers and soil conservation district supervisors to each other, and to State and Federal agricultural agencies.

"A soil conservation districts law was passed in this State about 15 years ago because our soil was washing into the Atlantic Ocean, taking with it our greatest source of health and wealth.

"The soil conservation districts law authorized the formation of soil conservation districts in given areas of the State.

"When farmers found that the purpose of soil conservation districts was to conserve soil and water, they voted to form one here in our county. Farmers in other counties did the same thing. Now the whole State is covered by soil conservation districts. In fact, every State in the Nation has soil conservation districts.

"The next step in the district formation was to set up a board of supervisors for each district. The State Soil Conservation Committee appointed two, and farmers within the district elected three, making a board of five farmers to manage affairs of the district.

"We asked the United States Department of Agriculture to send technicians from Soil Conservation Service right out on the land with the farmer to help him know the capability of his land and treat it according to its needs. Soil Conservation Service also furnished some materials to farmers in districts and some equipment.

"Supervisors of soil conservation districts learned early to request help of all State and Federal agencies according to the function of each agency. In our search for help, we called upon private agencies, too. Through districts, governed by farmers, we invited civic groups, bankers, schools, churches, women's clubs, and all interested citizens to help us spread the gospel of soil conservation. Thus, we brought to the aid of farmers in soil conservation districts, our Federal Government, private agencies, and State and local government.

"Through the soil conservation districts, with so much help available, soil and water conservation, and other good land use, appeared on farms of our State and Nation, on public lands and on other private lands used mainly for lumbering or other nonagricultural purposes.

"You ladies know the need for soil conservation. You know that where there is a need there is a responsibility. Therefore, in behalf of farmers and in behalf of our common well-being, I wish to solicit your continued interest in soil conservation, and your influence and help in promoting the purpose of districts, which is soil and water conservation."

CONSERVATION PRICE TAG.—The old 300-acre Exton farm, Spruce Run Valley, north of Clinton, Hunterdon County, N. J., has been sold by Richard A. Loeb, who established conservation farming there in 1936, to Raymond Minitz of Blairstown, for $150,000. Some of the conservation practices started by Loeb during the CCC days are still being followed as originally planned. Minitz, a Hollander who owns several other farms around Blairstown, will continue to operate it as a dairy establishment. There is a mixed 100-cow herd. The property includes three houses, two dairy barns, and a large breeding barn. Previously, Spruce Run Farm was part of the vast estate owned by the Louis Exton family since before Revolution days.